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### **FRAGILE X MENTAL RETARDATION PROTEIN AND mRNA AT SYNAPSE**

Samuel Seguin, Alain Dury, Sandra Tremblay and Edouard W. Khandjian.  
Centre de recherche Université Laval Robert-Giffard, Neurobiologie cellulaire, et CHUQ, Université Laval,  
Québec, Canada.

Synaptic dysmorphogenesis in Fragile X Syndrome is believed to result from altered regulation/transport of mRNA in dendrites due to the absence of the Fragile X Mental Retardation Protein (FMRP). While it is well established that FMRP is mainly associated with the translation machinery in the cell body, a small population is also found in RNA-granules that are transported in dendrites to be delivered at synapses. It is hypothesized that FMRP regulates the local protein synthesis at synapse, however the exact role and mechanism by which FMRP controls local translation remain unclear. We developed a specific neuron FMR1 gene transfer system by using an adenovirus recombinant vector. This allowed us to study the fate, dynamics and kinetics of FMRP-containing RNA granules in dendrites, using time-lapse videomicroscopy. In parallel, we succeeded in isolating a population of synaptosomes from mouse brain. We have characterized FMRP mRNA targets present in synapses polyribosomes after UV cross-linking and immunoprecipitation of FMRP with a new generation of avian antibodies. Our data provide new insights in the mechanisms underlying the regulation of dendritic FMRP-RNA granules transport and local synaptic translation.

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